

Claims

1. A method for producing a silica aerogel, which comprises combustion of rice husk until the white ash is obtained, dissolving rice husk ash in aqueous sodium hydroxide, heating and stirring the resultant gel mixture to produce a sodium silicate solution, adding concentrated sulphuric acid to the resulting water glass solution to convert the sodium silicate to silica and produce a silica hydrogel, aging the hydrogel to allow the gel structure to develop, displacing the water with a C₁ to C₄ alcohol, to produce an alcogel, and subjecting the alcogel, to super critical drying to form an aerogel.
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2. The method according to Claim 1 wherein the rice husk is combusted at a temperature in the range of 600°C to 700°C with excess air until the white ash is obtained.
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3. The method according to Claims 1 to 2, wherein the rice husk ash contains 92 – 97% of amorphous silica and trace amount of cations.
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4. The method according to Claim 3, wherein trace amount of cations present in rice husk silica are K⁺, Ca²⁺, Mg²⁺, Al³⁺, Fe³⁺.
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5. The method according to Claims 1 to 4, wherein the purity of silica of above 98% can be achieved by washing the rice husk in 1M sulphuric acid solution, followed by air drying prior to combustion.
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6. The method according to Claim 1, wherein the amounts of rice husk ash and sodium hydroxide are such as to give a ratio of Na₂O:SiO₂ of between 1:3 and 1:4.
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7. The method according to Claim 1, wherein the ratio of Na₂O:SiO₂ is about 1:3.33.
8. The method according to Claim 1 to 7, wherein the sodium silicate solution contains from 8 to 10% by weight of SiO₂.

9. The method according to Claim 8, wherein the sodium silicate solution contains 9% by weight of SiO₂.
10. The method according to any one of Claims 1 to 9, wherein the hydrogel is aged 5 for a period of up to 5 days.
11. The method according to Claims 1 to 10, wherein the C₁ to C₄ alcohol is methanol or ethanol.
- 10 12. The method according to any one of Claims 1 to 11, wherein hydrophilic aerogels are converted to hydrophobic aerogels by alkylation.
13. Silica aerogels produced by a process according to any one of claims 1 to 12.